

Reply to office action of 10/01/2003
Appl. No. 09/914,551

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (currently amended) Procedure for ~~control of the~~ controlling a content of microorganisms in a sugary, aqueous process medium of extraction systems ~~of the in a~~ in a sugar industry using hops acid as the ~~an~~ active substance, said procedure comprising the steps of: ~~characterized by the fact that~~

bringing hops acid brought into solution in an aqueous alkaline medium to form a first solution, and

adding said first solution is added to the process medium, whereby the

a pH value of the added first solution is higher than the a pH value of the process medium, and (and)

the hops acid in the process medium passes over from the a dissociated form into the a non-dissociated form.

2. (currently amended) Procedure according to claim 1, ~~characterized by the fact that wherein~~ the addition of the first solution to the process medium is done in a discontinuous manner.

3. (currently amended) Procedure according to claim 1, ~~characterized by the fact that wherein~~ the first solution displays contains hops acid in at a concentration of 2 - 40%, preferably 5-20%, preferably 10-15%.

4. (currently amended) Procedure according to claim 1, ~~characterized by the fact that wherein~~ the said first solution added to the process medium displays has a pH value of 7.0 - 13.0; preferably 7.5 - 12.0, preferably 9.5 - 11.0.

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5. (currently amended) Procedure according to claim 1, ~~characterized by the fact that wherein~~
~~being dealt with at least predominantly in the case of said hops acid is substantially a~~
 β -acid.
6. (currently amended) Procedure according to claim 1, ~~characterized by the fact that wherein~~
~~being dealt with at least predominantly in the case of said hops acid is an α -acid~~
and/or an iso- α -acid.
7. (currently amended) Procedure according to claim 1, ~~characterized by the fact that wherein~~
~~in the case of the said hops acid being dealt with at least predominantly is comprises~~
isomerized hops acid and/or its derivatives, or in any event a mixture thereof.
8. (currently amended) Procedure according to Claim ~~[[7]]~~ 1, ~~characterized by the fact that~~
~~wherein~~
~~in the case of the derivatives being dealt with at least predominantly are said hops~~
~~acid comprises tetrahydro-tetrahydro α -acid (THAA), or hexahydro- β -acid (HHBA), and in the~~
~~case of the hops acid derivatives are iso- α -acid (IAA), rho-iso- α -acid (RIAA), tetrahydro-iso- α -~~
~~acid (THIAA), and/or hexahydro-iso- α -acid, or in any event mixtures thereof.~~
9. (currently amended) Procedure according to claim 1, ~~characterized by the fact that wherein~~
~~provided as an said alkaline medium is comprises an alkaline hydroxide, in particular~~
~~potassium hydroxide or sodium hydroxide, or a mixture thereof.~~
10. (currently amended) Procedure according to Claim 9, ~~characterized by the fact that wherein~~
~~the concentration of the said alkaline medium amounts to contains a concentration of 0.1~~
~~- 5%, preferably 1 - 5% preferably 2 - 4% alkaline hydroxide.~~
11. (currently amended) Procedure according to Claim 1, ~~characterized by the fact that wherein~~
~~besides the addition of the solution, an alkaline lye is also supplied to the process medium~~
~~is additionally alkaline lye.~~

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12. (currently amended) Procedure according to claim 1, ~~characterized by the fact that wherein~~
the hops acid is dissolved in the alkaline medium as salt.

13. (currently amended) Procedure according to claim 1, ~~characterized by the fact that wherein~~
the first solution is added to the process medium manually.

14. (currently amended) Procedure according to claim 1, ~~characterized by the fact that wherein~~
the first solution is added to the process medium over already available dosing systems.

15. (currently amended) Procedure for the production of a solution of hops acid
used in a process for controlling a content of microorganisms in a sugary, aqueous process
medium of extraction systems in a sugar industry for addition to a sugary, aqueous process
medium, in particular of the sugar industry according to the procedure based on claim 1,
comprising the following procedural steps comprising:

- a) preparation of an aqueous medium;
- b) heating;
- c) addition of an amount of hops acid, in particular melted hops acid, measuring the
amount of hops acid such that the end concentration lies within a prescribed
predetermined concentration range;
- d) addition of ~~the an~~ alkaline medium for reaching a predetermined pH value;
- e) mixing the alkaline medium with the added ~~in~~ hops acid;
- f) maintaining the mixture at an elevated temperature over a ~~prescribed~~ predetermined
period of time;
- g) separating out the hops acid solution from the mixture or vice-versa, as well as
- h) cooling the hops acid solution.

16. (currently amended) Procedure according to Claim 15, ~~characterized by the fact that~~
wherein
the concentration of the hops acid in said hops acid solution lies in the range of 2 – 40%,
preferably 5 – 20%, especially preferred 10 – 15%.

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17. (currently amended) Procedure according to claim 15, characterized by the fact that wherein the mixture is held at a temperature in the range of 40 – 80° C, preferably 60 – 80° C, preferably 65 – 75° C.

18. (currently amended) Procedure according to the foregoing claim 15, characterized by the fact that wherein said hops acid solution is cooled down to a temperature below 10° C, preferably to a temperature in a range from 2 – 7° C.

19. (currently amended) Procedure according to one of the foregoing claim 15, characterized by the fact that wherein the separated out solution of hops acid has displays a pH value in the range of 7.0 – 13.0, preferably 7.5 – 12.0, preferably 9.5 – 11.0.

20. (currently amended) Procedure according to claim 15, characterized by the fact that wherein used as said hops acids are selected from the group consisting of β -acids, α -acids, iso- α -acids or a mixture thereof, or isomerized hops acids and/or their derivatives, in particular at least predominantly tetrahydro- α acid (THAA) or hexahydro- β acid (HHBA) or iso- α acid (IAA), the iso- α acid (RIA), tetrahydro iso- α acid (THIAA) and/or hexahydroiso- α acid, or a mixture thereof.

21. (canceled)

15 22. (new) Procedure according to claim 1, wherein said first solution contains hops acid at a concentration of 5- 20%.

16 23. (new) Procedure according to claim 1, wherein said first solution contains hops acid at a concentration of 10 – 15%.

17 24. (new) Procedure according to claim 1, wherein

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- 18 ^{11.5} said first solution has a pH value of 7.5 - 12.0.
- 19 ^{10.5} 24. (new) Procedure according to claim 1, wherein
said first solution has a pH value of 9.5 - 11.0.
- 20 25. (new) Procedure according to claim 1, wherein
said hops acid comprises an α -acid and an iso- α -acid.
- 21 26. (new) Procedure according to claim 9, wherein
said alkaline hydroxide is selected from the group consisting of potassium hydroxide,
sodium hydroxide, or both.
- 22 ²⁷ 27. (new) Procedure according to Claim 26, wherein
said alkaline medium contains a concentration of 0.1 - 5% alkaline hydroxide.
- 23 ²⁷ 28. (new) Procedure according to Claim 26, wherein
said alkaline medium contains a concentration of 1 - 5% alkaline hydroxide.
- 24 ²⁷ 29. (new) Procedure according to Claim 26, wherein
said alkaline medium contains a concentration of 2 - 4% alkaline hydroxide.
- 25 ²⁷ 30. (new) Procedure according to Claim 9, wherein
said alkaline medium contains a concentration of 1 - 5% alkaline hydroxide.
31. (new) Procedure according to Claim 9, wherein
said alkaline medium contains a concentration of 2 - 4% alkaline hydroxide.
32. (new) Procedure according to Claim 15, wherein
the concentration of the hops acid in said hops acid solution lies in the range of 5 - 20%.
33. (new) Procedure according to Claim 15, wherein
the concentration of the hops acid in said hops acid solution lies in the range of 10 - 15%.
34. (new) Procedure according to claim 15, wherein
the mixture is held at a temperature in the range of 60 - 80° C.

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37. (new) Procedure according to claim 15, wherein
the mixture is held at a temperature in the range of 65 – 75° C.
37. (new) Procedure according to claim 15, wherein
said hops acid solution is cooled down to a temperature in a range from 2 – 7° C.
38. (new) Procedure according to claim 15, wherein
the separated out solution of hops acid has a pH value in the range of 7.5 – 12.0.
38. (new) Procedure according to claim 15, wherein
the separated out solution of hops acid has a pH value in the range of 9.5 – 11.0.
39. (new) Procedure according to claim 15, wherein
said hops acids is selected from the group consisting of tetrahydro- α -acid (THAA),
hexahydro- β -acid (HHBA), iso- α -acid (IAA), rho-iso- α -acid (RIAA), tetrahydro-iso- α -acid
(THIAA), hexahydro-iso- α -acid, or a mixture thereof
39. (new) Procedure according to claim 15, wherein
said hops acid comprises a melted hops acid.